

UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION

WI-LAN, INC.,  
*Plaintiff,*

V.

HTC CORPORATION, et al,  
*Defendants.*

WI-LAN, INC.,  
*Plaintiff,*

V.

APPLE, INC., et al,  
*Defendants.*

CASE NO. 2:11-CV-68- JRG

CASE NO. 2:12-cv-600-JRG

**CONSOLIDATED**

**DEFENDANTS' BRIEF IN SUPPORT OF THEIR  
PROPOSED CLAIM CONSTRUCTIONS**

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Exhibit B	U.S. Patent No. RE 37,802
Exhibit C	Clare D. McGillem & George R. Cooper, Continuous and Discrete Signal and System Analysis (3d ed. 1991)
Exhibit D	Richard C. Dorf, Circuits, Signals, and Speech and Image Processing (3d ed. 2006)
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Exhibit F	Wi-LAN Technical Bulletin #3, "Multicode Direct Sequence Spread Spectrum," October 1993
Exhibit G	Declaration of Hatim Zaghoul and Michel Fattouche, Reissue Application of U.S. Patent No. 5,555,268 (September 10, 1998).
Exhibit H	Response to Office Action, U.S. Pat. App. 08/186,784, Aug. 23, 1995
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## I. INTRODUCTION

This case has two unique factors influencing claim construction. First, the patentees acted as their own lexicographer for a number of terms, setting forth specific definitions in the specifications of U.S. Patent Nos. 5,282,222 (the “’222 Patent”) and RE 37,802 (the “’802 Patent”) for those terms (collectively, “the patents-in-suit”). Second, in an earlier case brought by Wi-LAN (“Wi-LAN I”) involving *some* of the same defendants in this case,<sup>1</sup> Judge Ward of the Eastern District of Texas construed several of the terms that are at issue in this case.

While the parties have agreed to adopt a number of Judge Ward’s constructions, both Wi-LAN and the Defendants ask the Court to revisit certain terms.<sup>2</sup> Moreover, Defendants present *additional* rationale that was not in the papers before Judge Ward. Defendants’ constructions seek to clarify complicated wireless concepts for the jury and are compelled by the definitions set forth in the specification. Wi-LAN, on the other hand, attempts to keep technical terms undefined, rewrite the claim language, and propose constructions that are divorced from the context of the patents.

## II. LEGAL STANDARD

The Court should give each claim term the “meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). To determine the proper meaning of a disputed term in a patent claim, the Court looks first to the “intrinsic evidence,” namely the claim language itself, the specification, and the prosecution history. *See id.* at 1315.

In *Phillips*, the Federal Circuit described the evidence that a court should consider in interpreting claims. The most reliable form of evidence is the patent (the claims and

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<sup>1</sup> Despite Wi-LAN intimation to the contrary, *only 3* (Apple, Dell, and Hewlett-Packard) of the 8 parties in the current litigation were parties in Wi-LAN I.

<sup>2</sup> Wi-LAN criticizes Defendants for revisiting terms, yet Wi-LAN itself seeks to revisit the term “points,” which was previously construed by Judge Ward.

specification) and its prosecution history, because this “intrinsic evidence” provides “evidence of how the PTO and the inventor understood the patent.” *Id.* at 1317. The specification is particularly important and “is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Id.* at 1315 (citations omitted). Sometimes, a patentee will act as his own lexicographer, coining terms with unique meanings in the context of the patent. *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1329 (Fed. Cir. 2009). Such terms “are best understood by reference to the specification.” *Intervet Inc. v. Merial Ltd.*, 617 F.3d 1282, 1287 (Fed. Cir. 2010). Moreover, the prosecution history plays a unique role in claim construction, as it “gives insight into what the applicant originally claimed as the invention, and often what the applicant gave up in order to meet the Examiner’s objections.” *Lemelson v. Gen. Mills, Inc.*, 968 F.2d 1202, 1206 (Fed. Cir. 1992).

### **III. U.S. PATENT NO. 5,282,222**

#### **A. TECHNOLOGY OVERVIEW**

The ’222 Patent addresses techniques for reducing the complexity of prior art orthogonal frequency domain modulation (“OFDM”) systems. The “invention” of the ’222 Patent is a modulation technique for data transmission referred to as “wideband OFDM.” Ex. A, col. 5:19-22. Declaration of Dr. John G. Proakis (“Proakis Decl.”) at ¶ 7. This technique is used to “exchange information between transceivers.” Ex. A, col. 5:19-22. The ’222 Patent distinguishes wideband OFDM from the prior art OFDM by wideband OFDM’s use of a defined set of “wideband frequency channels” that, according to the ’222 Patent, allows the patented technology to avoid the use of certain prior art techniques, such as “clock recovery” and “carrier recovery.” *Id.* at cols. 4:44-55, 5:50-6:29; Proakis Decl. at ¶ 7. The ’222 Patent also explains that differential modulation (described in Defendants’ Technology Tutorial) is used to avoid the need for these prior art techniques. *See* Section III.B.1, below; Ex. A, cols. 5:30-34, 6:34-7:10, 9:26-28; Proakis Decl. at ¶ 9. Moreover, the ’222 Patent discloses how to eliminate components in prior art wireless transceivers in order to achieve the stated goal of a transceiver that is “small

in size,” consumes minimal power, and has low complexity. *See* Section III.B.5, below; Ex. A, cols. 1:43-49, 2:14, 19-23; Proakis Decl. at ¶ 9.

## B. DISPUTED TERMS FOR CONSTRUCTION

### 1. “Wideband Frequency Division Multiplexer . . .”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
wideband frequency division multiplexer for multiplexing the information onto wideband frequency channels	device that employs differential modulation to combine the information from multiple inputs into a single output for multiplexing the information onto wideband frequency channels <u>Alternative:</u> Indefinite	a device that combines the information from multiple inputs into a single output for multiplexing the information onto wideband frequency channels

While Defendants incorporate Judge Ward’s construction into their proposal, Defendants have included the critical concept that the multiplexer employs differential modulation when combining information onto wideband frequency channels. Thus, the parties’ dispute centers on Defendants’ proposed language—“device that employs differential modulation”—not previously considered by Judge Ward.

Here, “wideband frequency division multiplexer” is a term of art coined by the patentees without a generally understood meaning to one of ordinary skill in the art at the time of filing. Proakis Decl. at ¶ 11. When a patentee has acted as his own lexicographer and explicitly set forth a definition in the specification, that definition governs. *See Edwards Lifesciences LLC*, 582 F.3d at 1329. Furthermore, the scope and outer boundary of the claims are set by the written description and cannot be broader in scope than the invention that is set forth in that description. *On Demand Mach. Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1340 (Fed. Cir. 2006); *Phillips*, 415 F.3d at 1316. Thus, the term must be construed as a whole consistent with its definition in the specification.

The specification of the '222 Patent demonstrates that **only** differential modulation<sup>3</sup> was envisioned by the patentees.<sup>4</sup> Proakis Decl. at ¶ 12. According to the specification, the modulator 512 (D8PSK modulator) is the wideband frequency division multiplexer which performs multiplexing (*i.e.*, wideband modulation) by taking bits of data and turning them into DPSK (**differential** phase shift keying) symbols or DQAM (**differential** quadrature amplitude modulated) symbols. Ex. A, col. 5:30-34; col. 9:26-28; Proakis Decl. at ¶ 14. Since the modulator outputs **differential** symbols, it necessarily follows that the modulator must perform **differential** modulation.

Wi-LAN argues that the use of differential modulation is merely a preferred embodiment. Wi-LAN Br. at 8. But the passages cited by Wi-LAN do not suggest the use of non-differential modulation. Proakis Decl. at ¶¶ 15-16. Instead, those passages refer to the type of differential modulation being employed (*i.e.*, amplitude or phase differential modulation). *See* Ex. A, col. 7:15–27 (“Possibly, quadrature amplitude modulation might be used, but amplitude modulation makes it difficult to equalize the distorting effects of the channel on the signal.”);<sup>5</sup> *accord* Ex. A, col. 5:31-35 (“The frame carries the information intended for transmission under the form of multilevel **differential phase** shift keying (MDPSK) symbols or **differential** quadrature **amplitude** modulated (DQAM) symbols.”).

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<sup>3</sup> As discussed in Defendants’ Technology Tutorial, there are two types of modulation techniques in telecommunications that are used for transporting information—non-differential and differential modulation. In non-differential modulation schemes, sequential data symbols themselves carry the information that is being transmitted or received. Proakis Decl. at ¶ 13. In differential modulation schemes, on the other hand, the **difference** between adjacent symbols is used to carry the information, rather than the symbols themselves. *Id.*

<sup>4</sup> *See, e.g.*, Ex. A, col. 2:63-64 (“[T]he information being **differentially** encoded using phase shift keying.”), col. 7:15–27 (“[T]he effect of phase distortion is reduced by employing **differential phase modulation. Hence the modulation may be referred to as Differential OFDM (DOFDM)**”), col. 17:11-12 (“For wireless LAN, wideband **differential** orthogonal frequency division multiplexing is again employed.”) (emphasis added).

<sup>5</sup> Nothing in the specification suggests that reference to quadrature amplitude modulation refers to anything other than differential quadrature amplitude modulation. Proakis Decl. at ¶¶ 15-18. In fact, to the contrary, the specification refers to **differential** quadrature amplitude modulation. *Id.* at ¶¶ 12, 15-16 (emphasis added); *see also* Ex. A, col. col. 5:31-35.

Moreover, the specification's discussion of "wideband OFDM" demonstrates that differential modulation is critical to the operation of the claimed technology. Proakis Decl. at ¶ 17. As set forth in the '222 Patent and conceded by Wi-LAN,<sup>6</sup> "wideband OFDM" is defined as having "a K and  $\Delta f$  **large enough** to be able to achieve a specific throughput and **large enough** to be able *to avoid using either a clock or a carrier recovery device without substantially affecting the BER.*" Ex. A at col. 6:30-34 (emphasis added). But the specification fails to provide any guidance regarding what values of K and  $\Delta f$  are "large enough" to achieve wideband OFDM if non-differential modulation is used. Proakis Decl. at ¶ 19. The specification instead only discloses such guidance—in the form of four sets of "**rules**" that "**have to**" be used for determining K and  $\Delta f$ —for systems employing MDPSK (multilevel differential phase shift keying), a form of differential modulation. Ex. A, col. 6:34-7:10 (emphasis added); Proakis Decl. at ¶¶ 17-19.

Nowhere in the intrinsic record do patentees disclose or suggest **how** to calculate K and  $\Delta f$  "large enough to avoid substantially affecting the BER" in a system employing non-differential modulation. The patentee's failure to disclose **any** standard to determine the values of K and  $\Delta f$  for non-differential modulation necessarily means that, if the claims are construed to cover non-differential modulation as Wi-LAN suggests, a person of ordinary skill in the art would not be able to ascertain the scope of the invention. Proakis Decl. at ¶ 19. Simply put, under Wi-LAN's proposed construction, the public would have no way to determine whether they would be infringing. See *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1352 (Fed. Cir. 2005) ("Reference to undefined standards, regardless of whose views might influence the formation of those standards, fails to provide any direction to one skilled in the art attempting to determine the scope of the claimed invention."); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1342 (Fed. Cir. 2003) ("One cannot logically determine whether an accused product comes within the bounds of a claim of unascertainable scope."). And despite Wi-LAN's

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<sup>6</sup> See Wi-LAN Br. at 10 n. 13.

assertions to the contrary, *Exxon Research* further supports Defendants’ construction. In particular, the Court in *Exxon Research* noted that claims which do not “permit a potential competitor to determine whether or not he is infringing,” as demonstrated by Wi-LAN’s construction, fail to meet the definiteness requirements of 35 U.S.C. § 112. *Exxon Research & Eng’g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001).

**2. “Amplitude And Phase Differential Characteristics”/“The Amplitude And The Phase Differential”/“An Estimated Amplitude And An Estimated Phase Differential”**

Claim Term	Defendants’ Construction	Plaintiff’s Construction
amplitude and phase differential characteristics	This phrase is a limitation of the claim characteristics of both the amplitude and the difference in phase resulting from differential modulation of the received data signals	characteristics of both the amplitude and the difference in phase caused by the wireless channel
the amplitude and the phase differential	the amplitude and the difference in phase resulting from differential modulation of the received data signals	amplitude and difference in phase caused by the wireless channel
an estimated amplitude and an estimated phase differential	an estimated amplitude and an estimated difference in phase resulting from differential modulation	an estimated amplitude and an estimated difference in phase caused by the wireless channel

**a. The Preamble Is Limiting**

The term “amplitude and phase” is a limitation of claim 1. “In general, a preamble limits the invention if it recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the claim.” *Catalina Mktg. Int’l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). In particular, a preamble limits a claim if it “provides antecedents for ensuing claim terms.” *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282, 1306 (Fed. Cir. 2005) (citation omitted). The body of the claim contains the phrase “*the* amplitude and *the* phase.” Ex. A, claim 1. There is no antecedent basis in the claim for this phrase other than that language “amplitude and phase” in the preamble. Accordingly, the preamble is a limitation of the claim.

### b. The Data Signal Is A Differentially Modulated Signal

The patentees expressly claim the use of signals with amplitude and phase *differential* characteristics. As discussed above in Section III.B.1, differential modulation is critical to the operation of the claimed technology. This was confirmed by the applicants in a co-pending application filed and referenced during the prosecution of the '222 Patent. Ex. A, col. 4:6-10 (“For digital signals, which are of most interest here, the time interval between symbols may be assumed to be fixed so that while *the differential is a measure of the rate of change, it may be estimated as a difference between symbols or data points.*”). Wi-LAN concedes that amplitude and phase differential may result from differential modulation, but argues that the '222 Patent only uses such terms in claim 1 to describe amplitude and phase *distortion*. Br. at 7. But estimating *differentials* is necessary in a system employing differential modulation, as the differences between received signals contain the information being transmitted. And the '222 Patent repeatedly distinguishes between “differential” and “distortion,” demonstrating that the patentees did not use the terms interchangeably. Ex. A, col. 7:17-23.

### 3. “A Fourier Transform”/“Processor For Applying A Fourier Transform . . .”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
a Fourier transform	a mathematical function for converting from the time domain to the frequency domain	no construction necessary Alternatively: a mathematical function for converting between the time domain and the frequency domain
processor for applying a Fourier transform . . . to bring the information into the time domain for transmission	Indefinite	no construction necessary

#### a. A Fourier Transform Is Not An Inverse Fourier Transform

A Fourier transform (otherwise known as a fast or forward Fourier transform) is a well known mathematical function that converts data from the time domain to the frequency domain.

Proakis Decl. at ¶ 20.<sup>7</sup> An inverse Fourier transform (the opposite of a Fourier transform) converts data from the frequency domain to the time domain. *Id.* at ¶ 21.<sup>8</sup> Fourier and inverse Fourier transforms are used to encode and decode data. *Id.* at ¶ 22. For example, if a transmitter encodes data using a forward Fourier transform, the receiver will decode the data using an inverse Fourier transform and vice versa. *Id.*

Wi-LAN's construction of Fourier transform merely requires "converting between the time domain and frequency domain." Br. at 18. As written, Wi-LAN's construction improperly covers both a forward Fourier transform and an inverse Fourier transform, which is inconsistent with dependent claim 2. *Wright Med. Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1445 (Fed. Cir. 1997) ("[W]e must not interpret an independent claim in a way that is inconsistent with a claim which depends from it.").

Claim 2 of the '222 Patent recites "a deprocessor for applying an ***inverse Fourier transform*** to the samples output from the sampler." (emphasis added). As such, claim 2 demonstrates that the patentees understood the difference between a Fourier transform and an inverse Fourier transform. Proakis Decl. at ¶ 23. And since claim 2 refers to a deprocessor (*i.e.*, a receiver) for applying an inverse Fourier transform, the processor (*i.e.*, transmitter) of claim 1 ***must*** be applying a Fourier transform, ***not*** an inverse Fourier transform. *Id.* at ¶ 24. If the "Fourier transform" of claim 1 is interpreted to include an inverse Fourier transform, this would result in a situation where the processor and deprocessor would both be applying an inverse Fourier transform. *Id.* at ¶ 25. One of ordinary skill in the art would never understand such an

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<sup>7</sup> See also Clare D. McGillem & George R. Cooper, *Continuous and Discrete Signal and System Analysis* at 111 (3d ed. 1991), attached as Exhibit C; *Kustom Signals, Inc. v. Applied Concepts, Inc.*, 995 F. Supp. 1229, 1232 (D. Kan. 1998) ("[A] fast fourier transform [] analyze[s] the digital data and *transform[s] it into the frequency domain.*") (emphasis added); Richard C. Dorf, *Circuits, Signals, and Speech and Image Processing* at 14-3 (3d ed. 2006), attached as Exhibit D; Donald Christiansen, *Electronics Engineers' Handbook* at 2.31 (4th ed. 1997), attached as Exhibit E.

<sup>8</sup> See also Ex. C at 111; see also Ex. E at 2.31; see also Br. Ex. F Declaration of Alexander Haimovich ("Haimovich Decl.") at ¶ 15 ("The operation . . . that is ***inverse*** to the IFFT [(Inverse Fast Fourier Transform)] is the Fast Fourier Transform (FFT). The IFFT and FFT are a pair of operations . . .").

embodiment to be covered by the patent because a deprocessor (receiver) using an inverse Fourier transform would not be able to decode the received data. *Id.*

**b. The Asserted Claims Of The '222 Patent Are Indefinite**

The phrase “processor for applying a Fourier transform to the multiplexed information to bring the information into the time domain for transmission” is not amenable to construction. *See Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1353 (Fed. Cir. 2003). Realizing this, Wi-LAN attempts to rewrite the claim language to save its claims. Courts, however, cannot correct “insolubly ambiguous” claim language. *Haliburton Energy Svcs., Inc. v. M-I, LLC*, 514 F.3d 1244, 1249-50 (Fed. Cir. 2008); *Novo Indus.*, 350 F.3d at 1357-58; *see, e.g., Linksmart Wireless Tech., LLC v. T-Mobile USA, Inc.*, No. 2:08-CV-264-DF-CE, 2010 WL 2640402, at \*11 (E.D. Tex. June 30, 2010) (holding that “location [sic] the user access” is insolubly ambiguous).

Nevertheless, Wi-LAN’s construction does not save its claims. Under either side’s construction, Fourier transform includes a forward Fourier transform, which requires converting from the time domain to the frequency domain. When the definition of a forward Fourier transform is inserted into claim 1, the claim becomes internally inconsistent and nonsensical: “applying [a mathematical function for converting *from the time domain* to the frequency domain] to the multiplexed information to bring the information *into the time domain* for transmission.” Proakis Decl. at ¶ 26. Thus, asserted claims 1-3 are invalid as indefinite under 35 U.S.C. § 112, ¶ 2.

## 4. “Channel Estimator”/ “Channel Estimator For Estimating . . . ”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
channel estimator for estimating one or both of the amplitude and the phase differential of the received signals to produce as output one or both of an estimated amplitude and an estimated phase differential respectively	<p>Means-plus-function under 35 U.S.C. §112, ¶6</p> <p><u>Function</u>: estimating one or both of the amplitude and the phase differential of the received signals to produce as output one or both of an estimated amplitude and an estimated phase differential respectively</p> <p><u>Structure</u>: the schematic shown in Figs. 7a and 15 and the algorithm as described in Fig. 7b and col. 10:57-col. 12:12</p>	<p>channel estimator: a device that estimates the effect of the channel on the transmitted signals</p> <p>Apart from the construction of “channel estimator” and the “amplitude” and “phase differential” terms, further construction is not necessary. This limitation is not governed by § 112(6).</p>

The term “channel estimator” is properly construed as a means-plus-function term under 35 U.S.C. § 112, ¶ 6. Although the term does not use the word “means,” a claim term may still be subject to Section 112, ¶ 6 if the term is nothing more than “a nonce word or a verbal construct that is not recognized as the name of structure” and is simply a substitute for the term “means for.” *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1360 (Fed. Cir. 2004); *see also Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996) (“[M]erely because an element does not include the word ‘means’ does not automatically prevent that element from being construed as a mean-plus-function element.”). Here, it is evident that the phrase “channel estimator” has been substituted for the word “means” in “[means/channel estimator] for estimating . . . .”

The term “channel estimator” does not connote structure to one of ordinary skill in the art. Proakis Decl. at ¶ 27. Not only is the channel estimator described functionally in the claims<sup>9</sup> but, more importantly, the specification only describes the channel estimator in purely functional language as an algorithm implemented on a computer using source code:

<sup>9</sup> While the failure to use “means” creates a rebuttable presumption that § 112, ¶ 6 does not apply, “this presumption can collapse when a limitation lacking the term ‘means’ nonetheless relies on functional terms rather than structure or material to describe performance of the claimed function.” *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 Fed. Cir. 2003). To determine whether § 112, ¶ 6 applies even though the word “means” is not used, the Court must determine whether “the claim element recited a function without reciting sufficient structure for performing that function.” *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000) (emphasis added).

*[e]ach of the steps* [of the estimator] is *carried out in a computing means* that may be a special purpose computer or a general purpose computer programmed to carry out the digital signal processing described here, as for example with the *software* that has been filed with the Patent and Trademark Office . . . .

Ex. A, col. 10:60-66 (emphasis added). One of ordinary skill in the art would understand this passage to mean that the channel estimator is just described functionally as an algorithm implemented in source code. Proakis Decl. at ¶¶ 27-34. As such, the term “channel estimator” should be construed under 35 U.S.C. § 112, ¶ 6 to cover the particular structure (algorithm) recited in the specification. *See* Ex. A, Fig. 7b; col. 10:57-col. 12:12.

### 5. “Transceiver”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
transceiver	a device that transmits and receives data without the use of clock recovery, carrier recovery, automatic gain control, passband limiter, power amplifier, an equalizer, and an interleaver-deinterleaver	a device that transmits and receives data

The patentees expressly excluded the use of various components found in prior art transceivers. Defendants’ construction reflects this.

The “Background and Summary of the Invention” describes the goals of designing the claimed transceiver—the transceiver must be “small in size,” consume minimal power, and have low complexity. Ex. A, col. 1:43-49; col. 2:14, 19-23.

Figure 1 illustrates a prior art transceiver that includes clock recovery 136, carrier recovery 132, automatic gain control 130 (with passband limiter), power amplifier 120, equalizer 138, interleaver-deinterleaver 112, 142. Proakis Decl. at ¶ 35. In no uncertain terms, the specification identifies the advantages of “the present invention” over the prior art (*i.e.*, over Figure 1) – the omission of these components:

*The system*, as compared with prior art systems *omits* the clock or carrier recovery, automatic gain control or passband limiter, power amplifier, an equalizer or an interleaver-deinterleaver, and therefore has low complexity.

Ex. A, col. 2:19-23 (emphasis added).

Consistent with this statement, *all* embodiments of the claimed transceiver *omit* the clock recovery 136, carrier recovery 132, automatic gain control 130 with passband limiter, power amplifier 120, equalizer 138, interleaver-deinterleaver 112, 142 of Figure 1. See Ex. A, Figs. 5a-5c; 13a-c. The “Detailed Description” section also explains that “[w]ith implementation of *the present invention*, several of the blocks shown in Figure 1 are *not required*” (*id.* at col. 4:55-57) and then states “[i]t will now be explained how *the proposed system obtains the omission* of these blocks without impairing the quality and capacity of the system.” *Id.* at col. 4:61-63 (emphasis added); see also Proakis Decl. at ¶¶ 35-39. The specification goes on to state:

[c]omparing FIG. 1 (prior art) and FIG. 5, it will be seen that several conventional blocks are *not used in the present invention*, namely the interleaver-deinterleaver, the Power Amplifier (PA), both the clock and the carrier recovery, both the AGC and its associated Passband hard limiter, as well as the equalizer.

*Id.* at col. 12:44-49 (emphasis added). Taken together, this evidence would lead one of ordinary skill in the art to conclude that the disclosed technology intended to omit the components found in Figure 1<sup>10</sup> in order achieve the goal of creating a transceiver that is small, consumes minimal power, and has low complexity. Proakis Decl. at ¶¶ 36-39.

Moreover, the use of “the present invention” and “the system” when describing the technology limits the scope of the claim language. For example, in *Verizon Services Corp. v. Vonage Holdings Corp.*, the term “localized wireless gateway system” was limited to the functions disclosed in the specification because the specification referred to these functions when describing “the present invention.” 503 F.3d 1295, 1308 (Fed. Cir. 2007). The court also noted that “[w]hen a patent [] describes the features of the ‘present invention’ as a whole, this description limits the scope of the invention.” *Id.* (citation omitted). In *Microsoft Corp. v.*

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<sup>10</sup> See, e.g., *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001) (“Where the specification makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question.”); *Astrazeneca AB v. Mut. Pharm. Co.*, 384 F.3d 1333, 1340 (Fed. Cir. 2004).

*Multi-Tech Systems, Inc.*, the patent specification was clear that “the present system” was directed toward communications “over a standard telephone line” (circuit switched network), thereby eliminating a reading that included a packet switched network such as the Internet. 357 F.3d 1340, 1348 (Fed. Cir. 2004). *See also Honeywell Int’l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318 (Fed. Cir. 2006); *IP Innovation, L.L.C. v. eCollege.com*, 156 F.App’x 317, 321 (Fed. Cir. 2005).

Despite failing to identify any support, Wi-LAN nonetheless asserts incorrectly that Defendants’ construction is inconsistent with the specification. Wi-LAN further argues that Defendants’ construction is inconsistent with the claims, but this too is incorrect. First, Wi-LAN asserts that claim 7 has a clock and carrier recovery limitation. To the contrary, claim 7 recites the *reason* why the claimed transceiver has the ability to omit clock and carrier recovery but does not include clock and carrier recovery as a limitation. Wi-LAN also points to claim 3, arguing that the recited “power controller” is an automatic gain controller. Wi-LAN, however, points to nothing in the specification that equates these two components. Accordingly, Wi-LAN’s arguments fail to overcome the express language of the specification.

## 6. “Points”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
points	divisions within the frequency band	divisions of a wideband frequency channel

The term “points” is not found in the claim language itself. It is part of the agreed construction of “wideband frequency channels.” Defendants have adopted Judge Ward’s construction of “points” from Wi-LAN I, which aligns with the description in the specification: “[i]n OFDM, the entire available bandwidth B is divided into a number of points K . . . .” (Ex. A, col. 5:25-27); “[t]o implement wideband modulation in a cellular system with a plurality of portables and one or more base stations, a 100 MHz [frequency] band is divided into 4096 points, as shown in FIG. 2 . . . .” Ex. A, col. 7:28-31.

Despite having agreed to the construction for “wideband frequency channels,” Wi-LAN now attempts to improperly narrow “points” to only being associated with wideband frequencies.<sup>11</sup> The term “points” is described in the context of OFDM, not wideband OFDM. Ex. A, col. 5:25-30. Moreover, using Wi-LAN’s construction, the definition of “wideband frequency channels” will be read to include the term “wideband frequency channel”—“frequency channels with a K (a number of [divisions of a *wideband frequency channel*]) . . . .” Defining a term with itself cannot be correct.

Wi-LAN accuses Defendants of attempting to incorporate Judge Ward’s construction of “points” from claim 7 into claim 1. This argument is of no moment. The parties have agreed that the definition of “wideband frequency channels” includes “points.” As such, points should be given the same meaning regardless where the term is found. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (“claim terms are normally used consistently throughout the patent”).

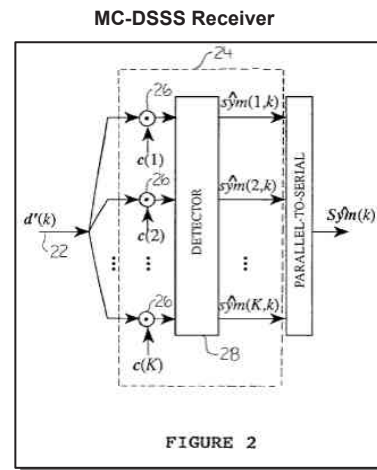
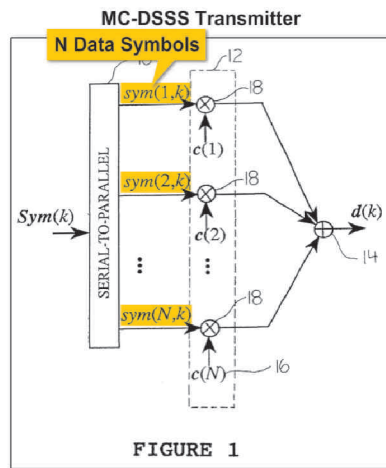
#### **IV. U.S. PATENT NO. RE 37,802**

##### **A. TECHNOLOGY OVERVIEW**

The ’802 Patent describes an enhanced technique for exchanging information between two receivers referred to as Multicode Direct Sequence Spread Spectrum (MC-DSSS). Ex. B, Abstract; col. 2:6-7. The ’802 Patent explains how prior art point-to-point DSSS systems suffer from the limitation that the effective bandwidth is reduced by the size (N) of the DSSS code word. *Id.* at 1:48-50; Proakis Decl. at ¶ 41. Essentially, for an N-length code word the bandwidth (B) is reduced by a factor of B/N. To compensate for this reduction, the ’802 Patent teaches the use of multiple orthogonal DSSS codes of length N, or MC-DSSS. Ex. B, col. 2:6-10; Proakis Decl. at ¶ 42.

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<sup>11</sup> Wi-LAN’s alternative construction will only serve to confuse the jury by adding another undefined term—“subchannels.”



As described in Defendants' Technology Tutorial, in order to implement MC-DSSS, a transmitter (fig. 1, above) uses a serial-to-parallel converter 10 to take groups of data symbols<sup>12</sup> from a stream of data symbols  $Sym(k)$  and breaks those symbols into *individual* data symbols  $sym(1,k) \dots sym(N,k)$ . Proakis Decl. at ¶ 43. To encode the symbols for transmission, a first computing means 12 then operates on each symbol by applying a DSSS code to each symbol. *Id.* at ¶ 44; Each DSSS code being used has the same number of chips (*i.e.*, the same number of 1s and 0s).<sup>13</sup> *Id.* Applying a DSSS code to a symbol causes the symbol to be spread and randomized. *Id.* The spread and randomized symbols are then combined together by a combiner 14 and transmitted wirelessly to a receiver (fig. 2, above). *Id.* at ¶ 45; The receiver separates the combined symbols and, using a second computing means 24, decodes the transmitted symbols to recover the original symbols. *Id.* A parallel-to-serial converter combines the recovered symbols into a stream of data symbols  $\hat{Sym}(k)$  which should correspond to the original stream of data  $Sym(k)$  from the transmitter. *Id.*

<sup>12</sup> Symbols are composed of a number of bits – 1s and 0s – that represent data to be exchanged between devices. Proakis Decl. at ¶ 44.

<sup>13</sup> "N" is explicitly defined as "the number of chips per DSSS code." Ex. B, col. 2:9-10.

**B. DISPUTED TERMS FOR CONSTRUCTION****1. “Converter”/“Converting [A/The] First Stream Of Data Symbols Into Plural Sets Of N Data Symbols Each”<sup>14</sup>**

<b>Claim Term</b>	<b>Defendants’ Construction</b>	<b>Plaintiff’s Construction</b>
converter	a serial-to-parallel device	a device that accepts data symbols in one form or mode and changes the data symbols to another form or mode
converting a/the first stream of data symbols into plural sets of N data symbols each	taking groups of data symbols from the first data stream, each group having N data symbols, and separating each group into N individual data symbols	no construction necessary

**a. “Converter”**

The ’802 Patent requires that the claimed “converter” be a particular type of converter, namely, a serial-to-parallel converter. Defendants’ construction—a construction not previously considered by Judge Ward—properly reflects this. Wi-LAN, on the other hand, proposes a construction that is overly broad and out of context with regard to the claimed technology.

The only discussion in the specification of the converter is limited: “a converter 10 converts a stream of data symbols into plural sets of N data symbols each.” Ex. B, col. 4:1-2. This same language is mirrored in the claims. As shown in figs. 1 (above) and 4 of the ’802 Patent, the converter 10 is identified as a serial-to-parallel converter. One of ordinary skill in the art reading this disclosure would understand the converter to be a device that takes a serial stream of data symbols and separates the data into parallel data symbols. Proakis Decl. at ¶ 46. There is no disclosure in the ’802 Patent of a “converter” that performs any other type of conversion. *Id.* at ¶ 47.

<sup>14</sup> For the avoidance of doubt, Defendants are asserting that the Court construe “converting a/the first stream of data symbols into plural sets of N data symbols each” in both claims 1 and 23, even though the Local Rules 4-3 Statement referenced only claim 23. Defendants should are not asserting that “converter for converting . . .” is means-plus-function language. Defendants have provided a construction for the term “converter” (claim 1) and “converting [a/the] first stream of data symbols into plural sets of N data symbols each” (claims 1 and 23).

Wi-LAN's construction of "converter" relies on dictionary definitions (Wi-LAN Br. at 20), which are extrinsic evidence divorced from the context of the patent. Proakis Decl. at ¶ 48. Under the dictionary definitions provided by Wi-LAN, a converter could encompass analog to a digital converter or a converter for converting from one code to another. Such constructions would render the claim nonsensical and, indeed, the specification clearly demonstrates that these types of converters are not contemplated for the **separation** of signals. *Id.* at ¶ 49.

**b. "Converting A First Stream Of Data Symbols . . ."**

Defendants have proposed a construction for "converting a/the first stream of data symbols into plural sets of N data symbols each." Wi-LAN does not agree with this construction yet argues that no construction is necessary. As there is a dispute regarding the scope of this term, Defendants request that the Court construe this term. *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

Wi-LAN argues that "nowhere does it suggest that the claimed 'converting' requires operation on 'groups of data symbols,' nor is it suggested that converting requires 'separating.'" Br. at 21. Yet that is precisely what is disclosed in the only embodiment in the specification. The specification confirms that the converter is disclosed by figs. 1 and 4 of the '802 Patent in view of the expression " $\text{Sym}(k)=[\text{sym}(1,k) \dots \text{sym}(N,k)]$  is the kth information-bearing vector containing N symbols" Proakis Decl. at ¶ 51; Ex. B, col. 2:38-40. To one of ordinary skill in the art, this expression describes the algorithm for converting a group of N data symbols  $\text{Sym}(k)$  into a plural set of data symbols  $\text{sym}(1,k)$ ,  $\text{sym}(2,k)$  . . .  $\text{sym}(N,k)$ , or in other words, into "N individual data symbols."

Given this expression in the context of figs. 1 and 4, one of ordinary skill in the art would understand "converting a/the first stream of data symbols into plural sets of N data symbols each" to mean that at a given point in time (k), the converter is taking a group of data symbols from the stream of data symbols  $\text{Sym}(k)$ , each group having N data symbols, and separating each group in parallel into N individual data symbols ( $\text{sym}(1,k)$ ,  $\text{sym}(2,k)$ , . . .  $\text{sym}(N,k)$ ). Proakis

Decl. at ¶ 52. Defendants’ construction—the only construction before this Court—reflects the invention described in the specification and should be adopted.

## 2. “N”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
N	the number of chips per DSSS code	the number of parallel data symbols

### a. Defendants’ Construction Comes From the Express Definition in the ‘802 Patent

The patentees, acting as their own lexicographer, provided an express definition for the term “N” (*i.e.*, the number of chips per DSSS code). The patentees recited this express definition in both the “Abstract” and “Summary of the Invention” section: “In this patent, we present Multicode Direct Sequence Spread Spectrum (MC-DSSS) which is a modulation scheme that assigns up to N DSSS codes to an individual user where ***N is the number of chips per DSSS code.***” Ex. B, Abstract; col. 2:6-10 (emphasis added). Under the case law, the patentees’ definition must govern. *See, e.g., Edwards Lifesciences LLC*, 582 F.3d at 1329; *Intervet Inc.*, 617 F.3d at 1287 (citing *Phillips*, 415 F.3d 1303); *Vitronics Corp. v. Concenptronic Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (“The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication.”).

Moreover, the concept of N, referring to the length (*i.e.*, the number of chips) of a DSSS code, is set forth in the “Background of the Invention” section: “An obvious limitation of DSSS systems is the limited throughput they can offer. In any given bandwidth, B, ***a code of length N*** will reduce the effective bandwidth to B/N.” Ex. B, col. 1:48-50 (emphasis added); Proakis Decl. at ¶ 53. Here, the DSSS system spreads a single data symbol using a single DSSS code, and the specification uses the term “N” to describe the length (*i.e.*, the number of chips) of the DSSS code. Proakis Decl. at ¶ 54. Furthermore, Figure 3, which illustrates the code generator for the DSSS codes used in the transmitter of Figure 1 and the receiver of Figure 2, also demonstrates that each DSSS code has a length of N chips ( $c(i,1), c(i,2) \dots c(i,N)$ ). Ex. B,

Figure 3, col. 2:54-57, 4:29-38; Proakis Decl., at ¶ 55. Thus, the specification consistently uses “N” as the number of chips of each DSSS code, and not, as Wi-LAN suggests, the number of parallel data symbols. As such, Defendants’ construction aligns with the intrinsic evidence. *See RenishawPLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998) (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.”).

Indeed, the concept of N as the number of chips per DSSS code is critical to the invention of the ’802 Patent. According to the ’802 Patent, prior art DSSS systems were limited in the throughput they could provide, as use of a code of length N would reduce the effective bandwidth B to B/N. Ex. B, col. 1:48-50; Proakis Decl. at ¶ 56. The patent purports to overcome this limitation by assigning multiple DSSS codes of length N to each transceiver. Any other construction would eliminate this key aspect of the invention. *Id.*

Defendants’ construction is also consistent with representations made by Wi-LAN outside the context of litigation as to the meaning of “N.” Specifically, an October 1993 technical bulletin by Wi-LAN entitled “Multicode Direct Sequence Spread Spectrum,” which predates the filing of the ’802 Patent, states: “Wi-LAN designed a modulation scheme that assigns *n* codes to an individual user if *the code length is n.*” Ex. F at 2.

#### **b. Wi-LAN’s Construction Improperly Broadens the Scope**

In contrast, Wi-LAN attempts to change the express definition to be “the number of parallel data symbols” and capture a scope beyond what the patentee actually invented. But nowhere does the specification expressly or implicitly contradict the express definition of N nor does it suggest that N is simply the number of parallel data symbols. Proakis Decl. at ¶ 57. In fact, there is no definition of N that is given relative to the number of data symbols. *Id.* at ¶ 58. Rather, the specification focuses its discussion of N relative to the chips per DSSS code and, correspondingly, the number of DSSS codes assigned to a transceiver: “[i]n this patent, we present Multi-Code Direct Sequence Spread Spectrum (MC-DSSS) which is a modulation

scheme that assigns up to N codes to an individual transceiver *where N is the number of chips per DSSS code.*” Ex. B, col. 2:6-10 (emphasis added); Proakis Decl. at ¶ 59.

Moreover, Wi-LAN’s proposed construction—“the number of parallel data symbols”—is incorrect because it merely rephrases the notion (*i.e.*, data symbols are separated into some number of parallel paths) already captured in the phrase “converting the first stream of data symbols into plural sets of N data symbols” and, thus, does nothing to clarify the scope of the term “N.” Proakis Decl. at ¶ 60. *See Bicon Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (rejecting the patentee’s proffered construction in part because the construction would render some of the claim language superfluous.).

### c. Wi-LAN’s Incorrectly Relies on Post Hoc Declarations

To support its position, Wi-LAN relies on after the fact representations made to the USPTO during prosecution of the reissue application (four years **after** the filing of the original patent application). Br. at 21-22. Namely, in a declaration submitted to the PTO, the patentees alleged that the specification contained an “error” that needed to be corrected:

In the claims and detailed description of the original patent, N is the number of data symbols in each data set. In the detailed description and in the summary of the original patent, N is also used in reference to the number of chips per direct sequence spread spectrum code and the maximum number of code. Nevertheless, in the summary of the invention (see column 2, lines 2-6), it is clear that there are up to M codes (substituting M for N as stated in the summary), where M is the number of chips per code. Although M equals N in the detailed description (which is a possible embodiment of the invention), this is not necessary, as indicated at column 2, lines 2-6.

Ex. G at ¶ 6.

Wi-LAN’s reliance on this representation is in error. First, the prosecution history of the reissue patent cannot be the basis for changing the express definition provided in the specification. *See Sinogchem Co. v. ITC*, 511 F.3d 1132, 1138 (Fed. Cir. 2007) (“When the specification explains and defines a term used in the claims, without ambiguity or

incompleteness, there is no need to search further for the meaning of the term.”) citing *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1478 (Fed. Cir. 1998)).

Second, according to 35 U.S.C. § 251, the error upon which a reissue is based must be one which causes the patent to be “deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent.” The patentees relied on the following sentence in the Summary of the Invention section as the basis for alleging there was an error with the specification: “[i]n this patent, we present Multi-Code Direct Sequence Spread Spectrum (MC-DSSS) which is a modulation scheme that assigns up to N codes to an individual transceiver where N is the number of chips per DSSS code.” Ex. B, col. 2:16-17. However, this sentence does not define or even suggest that “N” is the number of data symbols. Proakis Decl. at ¶ 61. Moreover, a person of ordinary skill in the art would interpret the sentence to mean that there are total of N available DSSS codes, *each DSSS code having N chips per code*, and a number less than or equal to those N available DSSS codes could be assigned to an individual transceiver as needed. *Id.* at ¶ 62.

### 3. “Invertible Randomized Spreading”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
invertible randomized spreading	spreading that is decodable and pseudo-randomized	spreading that is reversible and pseudo-randomized

The parties dispute whether “invertible” should be described as “decodable” or “reversible.”<sup>15</sup>

<sup>15</sup> In *Wi-LAN I*, the parties disputed the meaning of the term “reversible” in Court’s construction of the claim term “invertible randomized spreading. In that litigation, as here, Wi-LAN improperly attempted to limit the scope of “reversible” transforms to those transforms that are precisely reversible, such as spreading through the application of Walsh codes. This is improper, as explained above. Indeed, during prosecution, Wi-LAN specifically distinguished its invention from the prior art that utilized Walsh codes for spreading because of the “randomization of the transform.” Ex. H at 15 (“[t]he key here is the randomization of the transform. It is known in the art to spread symbols and spread spectrum applications, including by Walsh codes as shown in *Albrieux et al.*”).

Defendants’ proposed construction flows directly from the intrinsic record, where the patentee explained what was meant by invertible. As explained in the patent and prosecution history, “invertible” means that the claimed technology allows a receiver to recover the pre-encoded symbols that are sent from a transmitter. *See* Proakis Decl. at ¶ 63. The “Abstract” and “Summary of the Invention” of the patent states: “In this patent, we introduce new [DSSS] codes, which we refer to as [the] “MC” codes. Such codes allow the information in a MC-DSSS signal to be **decoded** in a sequence of low complexity parallel operations . . . .” Ex. B, Abstract; col. 2:15-18. Moreover, during prosecution, to overcome a rejection for failing to identify the means and method for achieving “invertible randomized spreading,” the applicants explained that “[t]he fact that the transform is in each case **invertible, means that** the transform is known beforehand and **a signal encoded by the use of the transform can be decoded** using the inverse transform.” Ex. I, at 1-2 (emphasis added). In other words, the patentees clarified that signals merely must be capable of being decoded, or recovered, by the receiver. The patentee’s reliance upon this definition to overcome the examiner’s rejection is binding as a matter of law. *See CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1158 (Fed. Cir. 1997) (“[T]hrough statements made during prosecution or reexamination an applicant for a patent or a patent owner, as the case may be, may commit to a particular meaning for a patent term, which meaning is then binding in litigation.”).

Similar to the definition of “N,” Defendants’ construction of “invertible” is also consistent with representations made by Wi-LAN outside the context of litigation as to the meaning of “invertible.” Specifically, in its October 1993 technical bulletin, Wi-LAN stated: “In Wi-LAN’s implementation, the information on all codes can be **decoded** in a single transformation.” Ex. F at 2.

Not only does Wi-LAN’s proposed construction improperly disregard the prosecution history and its own extrinsic evidence, it also conflicts with the specification of the ’802 Patent. The ’802 Patent explains that transforms for invertible randomized spreading can add irreversible error and thus are not truly “reversible.” *See* Ex. B, col. 4:29-34 (“Any one of the P N-point

transforms in FIG. 3 consists of a reversible transform *to the extent of the available arithmetic precision*. In other words, with finite precision arithmetic, the transforms are allowed to *add a limited amount of irreversible error*.”) (emphasis added); see also Proaxis Decl. at ¶¶ 64-65. As such, the Court should reject Wi-LAN’s construction.

#### 4. “Modulated Data Symbols”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
modulated data symbols	spread and pseudo-randomized symbols	data symbols that have been spread by a spreading code

Defendants’ construction of modulated data symbols being pseudo-randomized symbols<sup>16</sup> is supported by the intrinsic record. In particular, the ’802 Patent recites that the “first computing means” produces “modulated data symbols” generated by invertible *randomized* spreading of the first stream of data symbols. *See, e.g.*, Ex. B, claims 1, 10; col. 4:2-5. Moreover, during prosecution, the patentees explained that the “distinguishing feature” of its claims was the fact that the invention generates an “invertible randomized spreading of the symbols.” Ex. H, at 15. Indeed, the patentees emphasized that “[t]he *key* here is the *randomization* of the transform. It is known in the art to spread symbols and spread spectrum applications, including by Walsh codes . . . .” *Id.* at 15-16 (emphasis added).

Wi-LAN’s construction, which requires that “modulated data symbols” merely be spread—and *not* pseudo-randomized—is inconsistent with the specification and claims and directly conflicts with the patentee’s argument during prosecution. *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319, 1325 (Fed. Cir. 2002) (“Explicit arguments made during prosecution to overcome prior art can lead to narrow claim interpretations because ‘the public has a right to rely on such definitive statements made during prosecution.’”). As such, the Court should reject Wi-LAN’s construction.

<sup>16</sup> Given the parties’ constructions of “invertible randomized spreading,” there is no dispute that “randomized” means “pseudo-randomized.”

### 5. “Means For Receiving”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
means for receiving a sequence of modulated symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols	Function: receiving a sequence of modulated symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols  Structure: No structure disclosed  (Indefinite)	Function: receiving a sequence of modulated data symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols  Structure: element 22 of Figures 2 and 5, column 4:18-21, and equivalents thereof

Both parties agree that “means for receiving” is a mean-plus-function term under 35 U.S.C. § 112, ¶ 6.<sup>17</sup> There is, however, no structure disclosed in the specification for performing the claimed function and, thus, “means for receiving” is indefinite. *See Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1363-65 (Fed. Cir. 2012) (finding means-plus-function claim invalid for indefiniteness where sufficient structure was not disclosed in patent specification).<sup>18</sup>

The dispute between the parties centers on whether the specification discloses any structure associated with the function of “receiving a sequence of modulated data symbols.” The only mention in the specification of the means for receiving is limited to: “A sequence of modulated data symbols is received at 22.” Ex. B, col. 4:18-1. This description does not define any structure but, rather, describes the function of something numbered 22. Moreover, the

<sup>17</sup> Although Judge Ward mentions that one of the defendants raised this issue in the previous case, it appears that they did so without written briefing before the court. Thus, this issue was not fully before Judge Ward as it is in this matter.

<sup>18</sup> For means-plus-function claims, additional requirements of disclosure are imposed on the patentee to satisfy §112, ¶2. *Aristocrat Techs. Austl. Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1331 (Fed. Cir. 2008); *Net MoneyIN, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1367 (Fed. Cir. 2008). A means-plus-function term is indefinite if the specification fails to properly link “corresponding structure” to the claimed function such that one of ordinary skill in the art could not determine the proper boundaries of the claim. *In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (*en banc*); *see also Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338 (Fed. Cir. 2008) (“[I]f a claim includes a means-plus-function limitation, failure to disclose adequate structure corresponding to the claimed function results in the claim being invalid for indefiniteness.”).

number 22—which is not even identified as an element, component, or anything else—merely points to **a horizontal line** in Figure 2. One of ordinary skill in the art would not understand what, if any, structure (*e.g.*, physical structure, computer code, algorithm) is associated with the line in Figure 2 and unidentified number 22. Proaxis Decl. at ¶ 66. As such, “means for receiving” is indefinite for failing to disclose any corresponding structure.

#### 6. “Means To Apply Diversity”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
means to apply diversity to the combined modulated data symbols	<p>Function: apply diversity to the combined modulated data symbols</p> <p>Structure: no structure disclosed (Indefinite)</p>	<p>Recited Function: apply diversity to the combined modulated data symbols before transmission</p> <p>Corresponding Structure: element 32 in FIG. 6, columns 4:47-51, 5:26-30, 6:36-38, and equivalents thereof</p>

Both parties agree that “means to apply diversity” is a mean-plus-function term under 35 U.S.C. § 112, ¶ 6. Similar to “means for receiving,” there is no structure for “means to apply diversity” disclosed in the specification for performing the claimed function and, thus, “means to apply diversity” is indefinite. *See Ergo*, 673 F.3d at 1363-65.

As with “means for receiving,” the only mention in the specification of the means to apply diversity is limited: “Both transmitters . . . allow using shaper 30 in diversity module 32 shaping and time diversity of the MC-DSS signal as shown in FIG. 6.” Ex. B, col. 4:46-48. A “module,” however, is not sufficient structure—it does not describe the structure or algorithm for carrying out the claimed function. Proakis Decl. at ¶ 67. *See, e.g., Alcatel USA Res. Inc. v. Microsoft Corp.*, No. 6:06 CV 500, 2008 WL 2625852, at \*17 (E.D. Tex. June 27, 2008) (the “broad disclosure of a ‘set-up program **module**’ executed on a processor, similar to ‘software’ or ‘appropriate programming,’ is not sufficient algorithmic structure” and the term is ***indefinite*** and the associated claims are invalid) (emphasis added); *see also Ranpack Corp. v. Storopack, Inc.*, No. 98-1009, 1998 WL 513598, at \*2 (Fed. Cir. July 15, 1998) (holding that a “module” when merely coupled with a recitation of function, is a “black box” that does not connote definite

structure); *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006) (“The generic terms ‘mechanism,’ ‘means,’ ‘element,’ and ‘device,’ typically do not connote sufficiently definite structure.”).

Wi-LAN asserts that passages in the specification referring to “time diversity” and “antenna diversity” disclose the structure corresponding to “means to apply diversity.” Wi-LAN Br. at 28. Both these terms describe types of functions and are described in the specification as such. Proakis Decl. at ¶ 68. A person of ordinary skill in the art would not recognize either of these terms to refer to a structure. *Id.* at ¶ 69. As such, “means for receiving” is indefinite for failing to disclose any corresponding structure.

## 7. “M”

Claim Term	Defendants’ Construction	Plaintiff’s Construction
a set of more than one and up to M codes, where M is the number of chips per code	Indefinite	no construction necessary
more than one and up to M direct sequence spread spectrum codes		

The concept of “M” was first introduced into the claims during reissue prosecution. In their reissue declaration, the patentees recognized that the original claims as written required there to be N data symbols, N DSSS codes, and N chips per code. Ex. G at ¶ 6. In other words, the number of data symbols, DSSS codes, and chips were the same. Asserting that a mistake was made, the patentees argued that while the number of codes must equal the number of chips per code, the number of data symbols does not have to equal the number of codes or chips. *Id.* The patentees then changed the nomenclature relative to the DSSS codes and chips per code from N to M, asserting that there are N data symbols and M chips per DSSS code and there can be up to M DSSS codes. As discussed above in Section IV.B.2, there was no basis for the redefinition of N as the number of data symbols and the introduction of new variable “M” relative to the number of DSSS codes and the number of chips per DSSS code. In doing so, the patentees

impermissibly introduced new matter into the reissue application. 35 U.S.C. § 251 (“No new matter shall be introduced into the application for reissue.”). The reissue application subsequently issued with certain claims including the nomenclature “M.”

The claims with means-plus-function elements reciting the term “M” are indefinite if M does not equal N. A means-plus-function element is indefinite under 35 U.S.C. § 112, ¶ 2 if the patent specification fails to disclose any corresponding structure. *See Ergo*, 673 F.3d at 1365. With the exception of claim 23 (and its dependent claims), the terms “a set of more than one and up to M codes, where M is the number of chips per code” and “more than one and up to M direct sequence spread spectrum codes” are referenced in the context of being used by the first and second computing means. Since the first and second computing means are mean-plus-function elements governed by 35 U.S.C. § 112, ¶ 6, the ’802 Patent must disclose the corresponding structure for using “M” codes and “up to M” chips per code. But, since the claims were amended to include “M” for the first time during reissue prosecution (four years after the ’802 Patent was filed), there is no disclosure in the specification itself of the structure that uses “up to M” codes and “M” chips per code where M is different from N. Accordingly, the means-plus-function elements containing the term “M” are not supported by any corresponding structure and the claims reciting the elements are invalid as indefinite under 35 U.S.C. § 112, ¶ 2.

**8. “First Computer Means”/“Second Computing Means”/“Means To Combine”**

<b>Claim Term</b>	<b>Defendants’ Construction</b>	<b>Plaintiff’s Construction</b>
means to combine the modulated data symbols for transmission	Function: combine the modulated data symbols for transmission  Structure: combiner 14 as shown in Fig. 1 and described in col. 4:4-6 or parallel-to-serial converter 14 as shown in Fig. 4	Recited Function: combine the modulated data symbols for transmission  Corresponding Structure: element 14 of Figures 1 and 4, column 4:5-7, and equivalents thereof
first computing means for operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols	Function: operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols  Structure: element 12 as shown in Figs. 1 and 4 and described in col. 2:6-10, 36-40, 58-62; col. 4:2-4, 6-12, 35-44	Recited Function: operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols  Corresponding Structure: element 12 of Figures 1 and 4, columns 2:6-10, 2:36-40, 2:58-62, 4:2-12 and 4:35-44, and equivalents thereof
second computing means for operating on the sequence of modulated data symbols to produce an estimate of the second stream of data symbols	Function: operating on the sequence of modulated data symbols to produce an estimate of the second stream of data symbols  Structure: element 24 as shown in Fig. 2 and described in col. 2:41-53; col. 4:21-28 or the component between the serial-to-parallel and parallel-to-serial converters as shown in Fig. 5 and described in col. 2:63-67	Recited Function: operating on the sequence of modulated data symbols to produce an estimate of the second stream of data symbols  Corresponding Structure: element 24 of Figure 2, the elements of FIG. 5 between the serial-to-parallel and parallel-to-serial converters, columns 2:41-54, 2:63-67, 4:21-28, and equivalents thereof

**a. “Means To Combine”**

With regard to “means to combine,” the parties dispute whether the structure is a “combiner 14 . . . or parallel-to-serial converter 14” (as proposed by Defendants) or merely “element 14” (as proposed by Wi-LAN).

A means-plus-function term “shall be construed to cover the corresponding structure.” 35 U.S.C. § 112, ¶ 6. There is only one mention of the “means to combine” in the specification: “A combiner 14 combines the modulated data symbols for transmission.” Ex. B, Fig. 1; col. 4:5-7. Other than that, reference number 14 is identified in Figure 4 as a “parallel-to-serial

converter.” These are the specific structures disclosed in the specification for “means for combining” and, thus, the construction of the term should reflect these particular structures.

Wi-LAN’s use of the word “element” is overly broad and provides no meaningful boundary to the “means for combining.” Without providing specific corresponding structure, “a claim limitation described as a means for performing a function, if read literally, could encompass any conceivable means for performing the function.” *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1042 (Fed. Cir. 1993) (citing *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1580 (Fed. Cir. 1989)). As such, the construction should not use the word “element,” which appears nowhere in the specification.

#### **b. First and Second Computing Means – “Or Equivalents”**

The parties’ dispute regarding these terms centers on Wi-LAN’s inclusion of the language “and equivalents thereof” in its recitation of associated structure.<sup>19</sup> In order to prove Section 112, ¶ 6 equivalents, Wi-LAN must demonstrate that “the assertedly equivalent structure performs the claimed function in substantially the same way to achieve substantially the same result as the corresponding structure described in the specification.” *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267 (Fed. Cir. 1999). Similar to the doctrine of equivalent for non-means terms, Section 112, ¶ 6 equivalents is a separate inquiry. Incorporating “and equivalent thereof” in the construction conflates what should be a separate Section 112, ¶ 6 equivalents inquiry<sup>20</sup> with the literal infringement analysis. Wi-LAN cannot skirt its burden by folding equivalents into the literal scope of the claims.

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<sup>19</sup> While the substance of the parties’ definition of corresponding structure is the same, Defendants believe that their construction more clearly identifies for the jury which portions of the specification corresponding to the figures.

<sup>20</sup> *Utah Med. Prods., Inc. v. Graphic Controls Corp.*, 350 F.3d 1376, 1383 (Fed. Cir. 2003) (citing *Mas-Hamilton Grp. v. LaGard, Inc.*, 156 F.3d 1206, 1211-12 (Fed. Cir. 1998); see also *Odetics, Inc.*, 185 F.3d at 1268-69).

#### **IV. CONCLUSION**

For at least the foregoing reasons, Defendants respectfully request that the Court adopt their proposed constructions for each of the disputed claim terms discussed above.

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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that counsel of record who are deemed to have consented to electronic service are being served with a copy of DEFENDANTS' BRIEF IN SUPPORT OF THEIR PROPOSED CLAIM CONSTRUCTIONS via the Court's CM/ECF system per Local Rule CV-5(a)(3).

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